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FOREST INSECT & DISEASE MANAGEMENT

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EVALUATION OF PROPOSED DWARF MISTLETOE MANAGEMENT PROJECTS ON THE WHITE SULPHUR SPRINGS RANGER DISTRICT, LEWIS & CLARK NATIONAL FOREST

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SUMMARY

Residual lodgepole pine in older clearcuts are dwarf mistletoe-infected and pose a threat to regeneration present. Removal of these residuals coupled with planned or completed precommercial thinnings will effectively reduce dwarf mistletoe to an insignificant level and increase future volume yields. The benefit/cost ratio based on timber values alone is negative, but other benefits outweigh the economic ones.

INTRODUCTION

The White Sulphur Springs Ranger District has proposed the removal of dwarf mistletoe-infected lodgepole pine overstory from 4,680 acres to protect regeneration from infection by dwarf mistletoe. I evaluated these areas using aerial photos, my past experience in the area, and discussions with District personnel on April 3, 1978. Snow conditions precluded a visit to the stands.

TECHNICAL INFORMATION

Causal agent.--Lodgepole pine dwarf mistletoe, *Arceuthobium americanum* Nutt. ex Engelm.

Host.--Lodgepole pine, *Pinus contorta* Dougl.

Type of damage.--Reduction of tree vigor, height and diameter growth, and some mortality.

DESCRIPTION OF AREAS AND PROPOSED TREATMENT

General location of the proposed areas is shown in figure 1. Location of specific compartments is shown in figure 2.

Proposed treatment is to remove residual dwarf mistletoe-infected lodgepole pine overstory trees from cut-over stands with advanced reproduction. Average number of overstory trees is 10/acre. Specific areas to be covered by the project are:

Compartment	Acres
#2 Deadman	1,160
#3 Nugget	840
#4 Jumping Creek	1,450
#8 Miller	300
#9 Daniels	930
Total	4,680

FIDM targets for the project are shown in figure 3.

DISCUSSION

Dwarf mistletoe is responsible for the most serious disease losses in the lodgepole pine forests of central Montana. Growth losses of 50 percent or more are common. Dwarf mistletoe not only causes growth loss and direct mortality, but also predisposes trees and entire stands to attack by other disease organisms and insects.

Removal of infected overstory trees removes the dwarf mistletoe seed source, and the young stand remains essentially free of infection throughout the rotation.

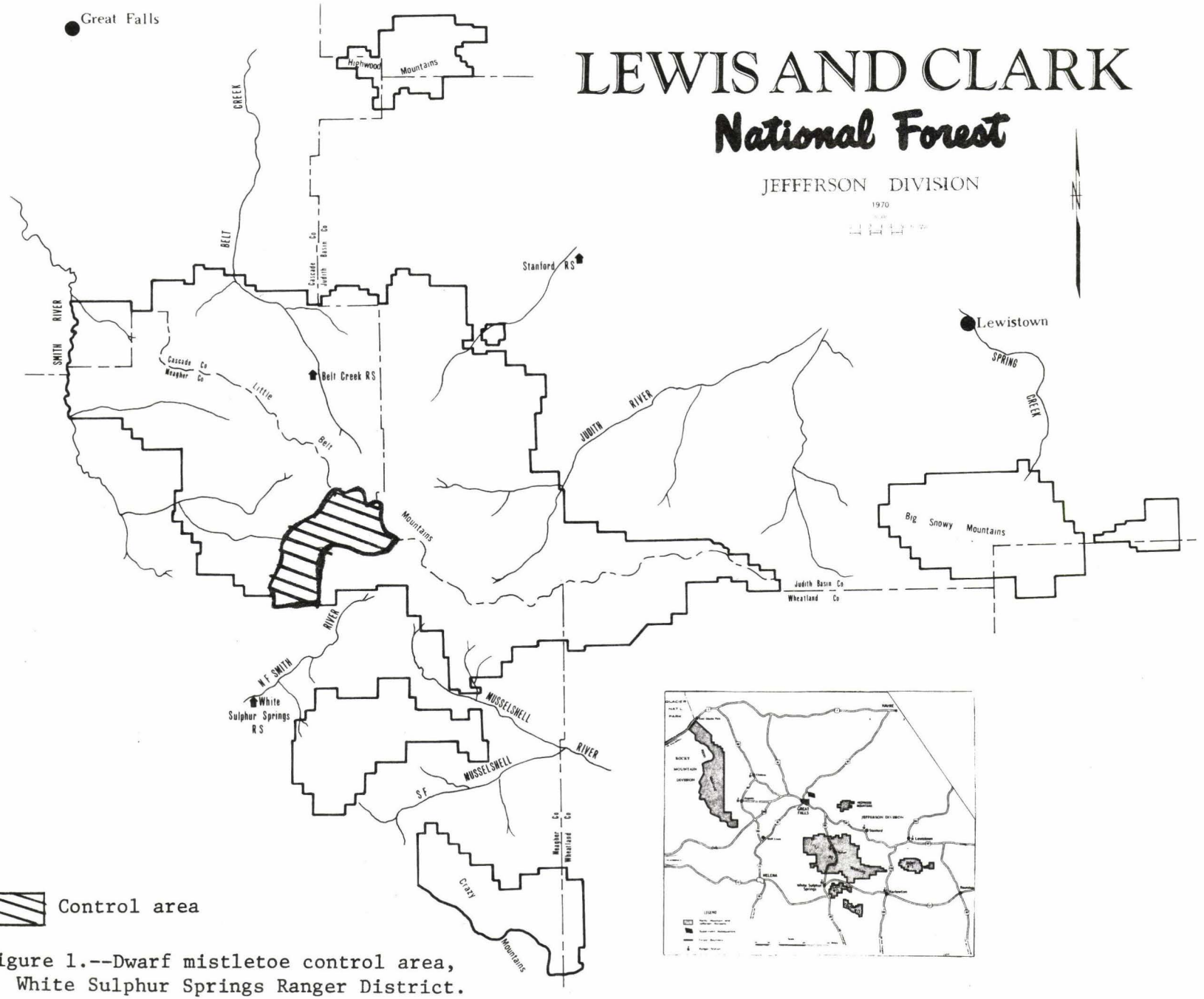
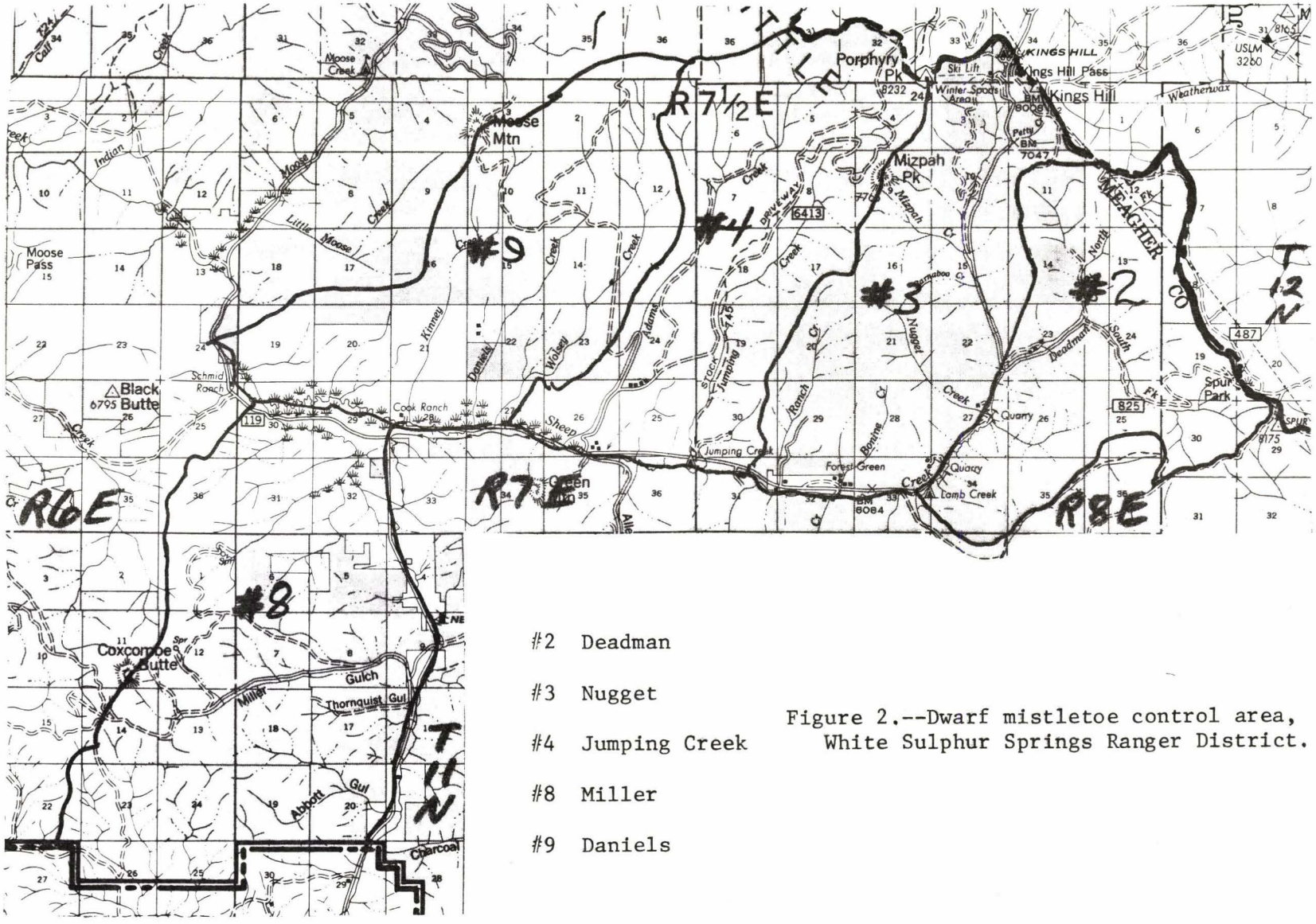


Figure 1.--Dwarf mistletoe control area, White Sulphur Springs Ranger District.



#2 Deadman

#3 Nugget

#4 Jumping Creek

#8 Miller

#9 Daniels

Figure 2.--Dwarf mistletoe control area, White Sulphur Springs Ranger District.

FIDM TARGETS

FOR THE White Sulphur Springs Dwarf Mistletoe SUPPRESSION PROJECT
(Name of Project)

	Acres (in M)	Vol. Protected (in MCF)	Vol. Removed (in MCF)
I&D Presuppression-Operational Survey		XXXXXXXXXXXXXX	XXXXXXXXXXXX
I&D Prevention/Suppression Using Biological Methods			
I&D Prevention/Suppression Using Chemical Methods			
I&D Prevention/Suppression Using Silviculture/Mechanical Methods. . .	4.7	34,592	655
Total	4.7	34,592	655

Figure 3.--FIDM targets for White Sulphur Springs dwarf mistletoe control area.

BENEFIT/COST ANALYSIS

Based on previous yield simulation computer runs for comparable areas, one precommercial and one commercial thinning should produce these volumes:

Cutting age	Volume recovery (MBF)	Value per MBF [a/]	Total recovery value ($)
20	-	-	-
70	2.0	40	80
100	16.0	40	640
Totals	18.0		720

a/ Current net stumpage value on the Lewis & Clark National Forest.

By applying a 10 percent discount rate to these values, the present net worth (pnw) of dwarf mistletoe control is:

Time (n)	Dollar value	Discount factor [a/]	pnw ($)
50	80	0.0085	.68
80	640	0.0005	.32
Totals	720		1.00

a/ Present value of $1.00 for n years @ 10%.

Cost of treatment will be $2.11 per acre. By dividing the pnw of the benefits by the treatment cost, the benefit/cost ratio is 0.47/1 (negative ratio).

These calculations assume that the value of stumpage will remain at present levels for 50 and 80 years. This is probably false; stumpage prices will continue to rise, the benefits will be greater, and the benefit/cost ratio may become positive.

There will also be value added to the economy. Each million board feet of timber cut creates 7 person-years of employment paying an average of $10,000 per year. This will generate 0.02 and 0.16 years of employment in 50 and 80 years respectively, and add $1,800 to the economy.

Another benefit not directly related to present net worth in dollars is the reduction in dwarf mistletoe infection at each stand entry. By the end of the first rotation, each area should be essentially dwarf mistletoe-free and should remain so for many rotations.

RECOMMENDATIONS

Decision for control.--Dwarf mistletoe management is biologically sound and should be done.

Control method.--Removal of dwarf mistletoe-infected overstory trees from cut-over stands with advanced regeneration is the method selected for management.

Impact of control on other resources.--Because management of dwarf mistletoe will be by removal of residuals from areas already clearcut, there will be no additional adverse impact on other resources. Environmental Analysis Reports for the areas have previously been written and approved and are on file at the White Sulphur Springs Ranger District office in White Sulphur Springs, Montana.